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THE PRINCETON COLLEGE BULLETIN



A QUARTERLY RECORD EDITED BY
THE PRESIDENT AND MEMBERS OF THE FACULTY

CONTENTS

Brown Hall,	69	REVIEW OF BOOKS:	
Building Notes,	70	Our Moral Nature: Dr. McCosh,	91
Candidates for the Doctor's Degree,	70	Victor Hugo's "La Chute." Edited by Prof. Huss,	92
ORIGINAL CONTRIBUTIONS:		The Nicene and Post Nicene Fathers: Dr. Richardson,	93
Confirmation of Barnard's Discovery of Jupiter's Fifth Satellite,	71	NOTES,	93
The Re-Discovery of the Tile-Fish,	72		
The Evolution of the Pre-Molar Teeth,	74		
The Genera of American Creodonts,	76		
Coleridge's Notes on Horace,	81		
Some Points of General Interest upon the Habits of the Rattle-Snake,	90		

PRINCETON

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DAVID BROWN HALL.

PRINCETON COLLEGE BULLETIN.

EDITED BY THE PRESIDENT AND MEMBERS OF THE FACULTY.

VOL. IV.

NOVEMBER, 1892.

No. 4.

DAVID BROWN HALL.

On the 21st of September last, the College entered into the possession of a handsome building to be known by the above name in commemoration of the husband of Mrs. David Brown. This is the second substantial evidence of this character, which Mrs. Brown has given of her kindly feeling towards the College, her endorsement of its aims and her appreciation of its most pressing needs.

The building stands on the southern side of the newly completed south quadrangle, and is an imposing structure, in good keeping with the other handsome buildings which surround it. The quadrangle is indeed noteworthy for the differing character and fine execution of the buildings which enclose it; the two marble Halls, the Art School, Albert B. Dod Hall and David Brown Hall are all worthy companions in this group of buildings.

David Brown Hall is modeled exteriorly after one of the palaces of ancient Florence. Its two lower stories are built of Quincy granite, and the two upper of Pompeian brick. The building is entered through a handsome archway leading to the central court-yard. There are four entries leading to the hallways from this court, which lead to the thirty-two double and twenty-two single rooms in the building. The hallways are located so that the

windows lighting them open upon the court; they are large and well lighted, of open construction, the rafters being cased in oak, while the stairs and balustrades are of the same material.

The rooms are located on the outside of the building, and are all equally desirable, the favorites being upon the southern side commanding the fine view of the rolling lowlands in that direction. They are all well lighted, and those upon the north side are the only ones which will not have the direct sunlight for a part of the day. They are heated by open grates, and each room has its own coal-locker in the hallway. The internal finish of the rooms is of yellow pine and poplar.

The building may be said to be an experiment in the way of a college dormitory on account of many novel features in its construction. The day is past when it was considered necessary that the student should live in a dungeon, or with surroundings which reminded him of a poor-house, and it is hoped that this and all coming generations of students will appreciate these comforts derived from the bounty of our benefactors.

The building was designed by Mr. J. Lyman Faxon of Boston, and has cost over \$100,000.

After the opening exercises of the College the building was opened to the public. President Patton in a short address thanked

Mrs. Brown for her gift, and then dedicated the building to the memory of her husband in prayer. It was a pleasure to have Mrs. Brown in attendance upon this occasion, and have her throw open the doors of the building with her own hand.

BUILDING NOTES.

The building operations which are in progress on the campus were rapidly pushed during the summer. As full descriptions of the new buildings will be given from time to time in the BULLETIN, it is only necessary now to note the progress which has been made on them. The Halls of the Literary Societies were finished at Commencement, so far as their exteriors were concerned, but considerable additional work has been done on them. Their appearance has been greatly improved by the removal of the piles of earth and debris which surrounded them. The David Brown Hall is finished, and was formally opened on the first day of the term. The new Commencement Hall, given by Mrs. Charles B. Alexander, is so far advanced that its general effect can be seen. Only a few stones remain to be laid, and the roof is being put in place. The Isabella McCosh Infirmary lacks still the interior finish. The walls of the Brokaw Memorial Field House are being constructed, and the grading of the field is proceeding on a most extensive plan. The Princeton Inn, a building which, though not college property, will yet be of great service to the institution, is also making rapid progress.

Extensive grading was done during July and August in that part of the campus lying south of the halls. The ground has been levelled and sown with grass-seed, and walks have been laid. This part of the campus, bounded by Clio

and Whig Halls, by Albert B. Dod Hall, by David Brown Hall, and by the Art Museum, will be known as the South Quadrangle.

Some changes have been made in the interior arrangements of the School of Science, that were made possible by the removal of the Department of Chemistry to the Chemical Laboratory. The lecture-room and the two adjoining rooms on the first floor, which were used for chemistry, have been assigned to physics, and the corresponding rooms on the second floor have been given to biology and astronomy. The Department of Graphics now uses the lecture-room which has hitherto been used for astronomy, and also takes the old biological laboratory as a drawing-room.

CANDIDATES FOR THE DOCTOR'S DEGREE.

The Preliminary Examination for Higher Degrees was held September 28th in the Faculty Room. The following new candidates were enrolled:

Mr. Alfred Pearce Dennis, A.B., Princeton 1891, for the degree of Ph.D., with History as the chief subject.

Mr. Francis M. Frazer, B.S., Princeton 1888 M.D. 1891, candidate under the old plan for the degree of Ph.D. in Science, with Physiological Psychology as the chief subject.

Rev. John Grier Hibben, A.B., Princeton 1882, for the degree of Ph.D., with Ethics as the chief subject.

Mr. Caspar Wistar Hodge, A.B., Princeton 1892, for the degree of Ph.D., with Metaphysics as the chief subject.

The total number of candidates at the present time (November 1st) is twenty, distributed according to their chief subjects, as follows:

In Mental Philosophy,	6
In History and Political Philosophy, . .	3
In Classics,	2
In Modern Languages,	3
In Mathematics,	3
In Chemistry,	1
In Biology,	2

The newly revised regulations for the Doctor's degree, which passed the Faculty last December, were approved by the Board of Trustees through the Committee on the Curriculum, in June, 1892, and are now in operation. Copies may be obtained from the Registrar of the College.

ORIGINAL CONTRIBUTIONS.

CONFIRMATION OF BARNARD'S DISCOVERY OF JUPITER'S FIFTH SATELLITE.

By TAYLOR REED.

A new satellite of Jupiter was discovered by Prof. E. E. Barnard with the great telescope of the Lick Observatory on the night of Sept. 9, 1892. Measures of its position with reference to the planet were obtained on Sept. 10 and following nights. The first announcement gave for its distance from the planet 112,000 miles, and for its period 12 hours, 36 min., which was by some error changed into 17 hours, 36 min. in the European publications. It was stated to be of the thirteenth magnitude, and so a difficult object in the glare surrounding the planet. In a later and more detailed communication to the *Astronomical Journal* the period computed from the distance was given as 11 hours, 50 min.

The satellite was looked for by Prof. Young immediately on his return to Princeton, Sept. 16, and by myself after Sept. 20. It was not seen, at first from the formation of fog shortly after midnight on several good nights, so that the satellite's elongation near two in the morning could not be observed, and later on account of the error in the period of 11 hours, 50 min. It was first seen in Princeton by myself at the Halsted Observatory on the night of Oct. 10.

At the time the satellite was found the

observations at hand were those of Barnard, Sept. 10, 11, 12, 13 and 14, published in the *Astronomical Journal*, No. 275, and one by Barnard, Sept. 23, communicated by him to Prof. Young by private letter.

In reckoning the time of elongation the erroneous period of 11 hours, 50 min. was used without noticing its inconsistency with the observation of Sept. 23. The satellite was actually found on the opposite side of the planet from that indicated by this period. It was first seen a little before midnight. The four bright satellites were then all on the western side of the planet, while the faint satellite was on the eastern, so that the planet and the bright satellites could be hid behind a single occulting bar. An eyepiece was inserted, on the field lens of which a piece of blue glass was cemented, so that when the planet was brought partly out from behind the occulting bar the edge seen through the blue glass was not bright enough to drown out the satellite. Rough measures were made by putting the micrometer wire (unilluminated) first on the limb of the planet and then on the satellite. These were taken primarily for the purpose of ascertaining whether the body relative to the planet was that of a star or that of a satellite. They gave the following results:

Oct. 10	E. S. T.	Dist. fr. Limb.	Dist. fr. Centre.
13 ^h	3. ^m 7	36."5	61."9
13	13. 9	36. 3	61. 7
13	49	31. 2	56. 6

It was estimated that elongation occurred at $12^h 40^m \pm 10^m$. The satellite was lost in the glare of the planet quite suddenly about $13^h 55^m$.

Under favorable circumstances the satellite is not a very difficult object in the 23-inch telescope. The observations seem to warrant the belief that it ought to be seen almost surely in instruments of eighteen or twenty inches aperture and possibly with fifteen inches.

It was seen on the night of Oct. 11, when the atmosphere was quite thick; and with a sky even worse on Oct. 13, when it was shown to several others.

The observations here on Oct. 10, 11 and 13, and Barnard's observation of Sept. 23, seem to demand a period very close to 11 hours, 57 min. Barnard's period of 11 hours, 50 min. entirely fails to satisfy them.

Seven satellites have been discovered this century by four observers. It is an interesting circumstance that four of the seven have been discovered by three Americans.

THE RE-DISCOVERY OF THE TILE FISH.

By WILLIAM LIBBEY, Jr.

The temperature work of the past three summers has borne its first fruits in the re-discovery of this valuable food-fish, supposed to have become extinct.

As its reappearance was predicted upon the basis of the observations made by our party it gives a very positive proof of the value of the work; and further the record of the process by which the conclusion was reached is interesting as it gives another instance of the practical application of a rather complex and abstruse piece of scientific work.

This fish was first discovered in 1879 by a Gloucester fishing-schooner which secured

a large number of them. Specimens were sent to fish experts and the markets, and it was at once recognized as a fish of value for its food qualities. As it was found within a few hours sailing distance of New York, the fishermen saw that it gave promise of an important additional fishing ground. The Fish Commissioner, realizing the important nature of the discovery, began a careful investigation of the entire region in order to determine the extent of the grounds, the abundance of the fish and the best means of catching them. The investigation was pursued during the summers of 1880 and 1881, specimens being taken on nearly all the trips made by the Commission vessels to this region. The result of these trips showed that the fish were abundant, and that the hopes based upon the discovery were well founded.

In the spring of 1882, however, enormous quantities of this fish were found dead upon the surface of the ocean, from Nantucket to Cape May, and since that time none of them have been taken, despite the efforts put forth at frequent intervals to find them.

In 1889 a systematic study of the relations of the Gulf Stream and the Labrador Current was instituted by the Commissioner, Col. M. McDonald, under the charge of the writer, with the idea of establishing a connection between the changes in the temperature of the water and the movements of the schools of fish.

The first report, that for 1889, has already appeared, and that for 1890 is in press.

One of the peculiar features developed by the study of the serial temperatures was the existence of a deep warm water band, lying between the depths of 70 and 100 fathoms. This band was found to be a projection laterally from the deeper portion of the warm water of the Gulf Stream, extending toward the edge of the

continental platform. It appeared that the point of this extension was approaching the angle of the continental platform nearer and nearer each year. In 1889 the 50° F. temperature curve which seemed to be the boundary of this warm band, did not touch the edge of the platform at any point. In 1890 it did so in several points along the portion of the coast south of Martha's Vineyard in the latter part of the summer. In 1891 the contact occurred earlier in the season and at more points than in the previous year, but they were still confined to the easterly portion of the area we were studying and only in a few instances did we find a contact at the continental edge south of Block Island, and then only late in the season, during the last few days of August.

These observations showed that the motion of this band had been progressive, and that if this were to continue, the whole edge might be covered by this warmer water, thus brought in from the main body of the ocean. The contact of this warm water with the bottom at the edge of the continental platform, could not but produce important results by the modification of the temperature conditions of the water. The change of nearly 10° in temperature at such a depth would without doubt completely modify the character of the life to be found there. The change would be the equivalent of a movement of from 700 to 1000 miles in a southerly direction.

Judging further, from the rate of progression and taking for granted that the conditions, physical and mechanical, were the same to the westward, it was anticipated that we would find the edge completely covered by this warmer water. The bearing of this upon the problem is easily seen when it is understood that by such means the feeding ground of fish needing the temperature of 50° F. and

above for their comfortable existence would be enormously extended, and that any fish inhabiting such a band would find their way to the northward and eastward until they reached the point where this warm band left the continental edge, which would naturally occur to the eastward of Cape Cod.

In order to account for the disappearance of the tile-fish in 1882, the following theory was advanced. Suppose that during the period in which these fish were formerly found upon this area there had been a similar progressive movement of this body of warm water toward the continental edge, and that by a reversal of the conditions which had established this motion, the motion had been reversed in 1882; then, the first point at which this warm band would leave the edge would be found in the great bend of the coast southeast of New York, which we have already noted as being the last to be touched by the warmer band in its landward motion. The correspondence of this area with that covered by the dead fish in 1882 is too striking not to deserve mention.

The consequence of this recession of the warm band of water would be that the fish who had found their way to the eastward upon this area would be subjected to conditions which would bring about the result accomplished, namely, their wholesale destruction by the sudden lowering of the temperature of the water.

These deductions having been made upon the basis of our three years work, preparations were made to test the theory practically by fishing along the area covered by water of 50° F. and above, on the edge of the continental platform. It was hoped that the fish would either be found at some point southeast of New York on the area covered by the warm water, or if the whole continental edge were covered

that they would be caught once more upon the ground where they were originally discovered.

During the first week in August the test was made, and the fish was taken south of Martha's Vineyard. The work was continued until Oct. 15th, and the fish were caught over the entire area from the above-mentioned point to a position about 50 miles south of Cape Henlopen.

Observations were made in such a way as to enable us to obtain a map of the area covered by this warm water. The fish were not found in large numbers, but it is believed that next year—if the conditions are the same—the schools thus announced by their advanced guard will put in an appearance.

The Tile-fish (*Lopholatilus chamaeleonticeps*) has many peculiarities of its own which would enable even a casual observer to distinguish it from any other species of our northern waters. In size it varies from 5 to 50 lbs; its head is proportionately large—somewhat resembling the dolphin and wolf-fish. The body is well formed, quite stout at the tail like the salmon, and its general make-up indicates that it is a rapid swimmer.

It is most distinguished, however, by the nuchal crest, or adipose dorsal fin just in front of the spinous dorsal; and its peculiar color, a blue or violet color above, white below, with some areas of yellow; the darker portion of the fish being thickly covered with scales of a brilliant yellow, which give it the tessellated appearance from which the fish derives its name. The fish is a member of the family *Latilidae*, and is most nearly related to the genus *Latilus*. There are three species known, all of which inhabit tropical and warm seas.

THE EVOLUTION OF THE PREMOLAR TEETH.

By W. B. SCOTT.

Cope and Osborn have followed out the development of the molar teeth from the simple primitive form, a slender cone, and the latter has proposed a system of nomenclature for the cusps or elements of the molar crown, founded upon the order of succession in which these cusps make their appearance and their position with reference to the primary cone. I have elsewhere pointed out that this order, and in consequence this nomenclature, does not apply to the premolars, and that, assuming the correctness of Osborn's system, the cusps of the premolars are not homologous with the corresponding ones of the molars, even where the two classes of teeth display crowns of precisely similar patterns. Inasmuch as the premolars are in general of a much less complex pattern than the molars, and in any case they have attained full development long after the latter, it becomes easy to follow out step by step the evolution of these teeth. For this purpose the many marvellously complete phyletic series of mammals which have been found in the lacustrine Tertiary formation of the West, afford most satisfactory material. For the molars this is not the case, because these teeth had already reached the tributercular stage in the lowest Eocene, or Puerco, and before that time the mammals are found but very scantily and but badly preserved.

The development of the premolars from the simple to the complex form is not always the same in all cases. Even in the same animal the order of succession in which the various cusps appear is frequently different in the different teeth. It will be necessary, therefore, to select some one tooth as a standard,

according to which the various cusps may be named. So far as I have been able to observe, the fourth upper premolar always follows a certain order in the addition of new elements, and accordingly will be selected as the standard.

The primitive form of tooth in the premolars, as in the molars, is the simple cone. Obviously this element must be homologous in both categories of teeth and may be called in the upper premolar, as Osborn has proposed for the molar, the protocone. As soon, however, as a second element is added, an important difference between the molar and premolar crown is observable; viz., that in the former the protocone is placed at the *antero-internal* angle of the crown, and in the latter at the *antero-external* angle. In the premolar the first element which is added to the protocone, appears upon the internal or lingual side of that cusp, occupying a position which corresponds to the molar protocone, but which is clearly not homologous with it; this cusp may be called the deuterocone. The next stage of premolar development consists in the addition of an external cusp, posterior to the protocone; this corresponds to the metacone of the molar, but obviously is not homologous with that element, for its position with reference to the protocone is altogether different; it may be called the tritocone. The last step in the formation of the quadritubercular molariform premolar consists in the development of a postero-internal cusp, which may be called the tetartocone, and which represents the hypocone of the molar crown. Conules corresponding to the proto- and metaconules of the molar may make their appearance and may develop into transverse crests, fusing with both the external and internal cusps. In short, the premolar may become altogether molariform, as, for example, in many perissodactyls,

but the order in which the new cusps are added and their relations to the primary cone are not the same as they are supposed to be in the molars.

As already mentioned, the premolars are not entirely constant as to the order of succession of the cusps, though there appears to be no reason to doubt that they are homologous throughout. One exception to this statement should be made for the inner crescent of the anterior upper premolars of certain artiodactyls. Typically this crescent is formed by the extension of the deuterocone, but in the cases mentioned it is developed from ridges advancing from the anterior and posterior margins of the crown, which finally meet and coalesce in the middle line.

The inferior premolars exhibit even more variety in the order of succession of the cusps than do the upper ones, though the homologies of these elements are given with sufficient clearness by their relations to the primary cusp or protoconid. Usually the first new element to appear is the posterior basal cusp, which will eventually become the external part of the talon and thus corresponds to the hypoconid of the molar; but if Osborn's view of the genesis of the molar crown be accepted, this element is homologous with the metaconid, as appearing originally on the posterior side of the protoconid. The second addition may be the anterior basal cusp, which both in position and in homology is equivalent to the paraconid. On the inner, or lingual, side of the protoconid arises a cusp which though having the same position as the molar metaconid, is nevertheless the homologue of the deuterocone of the upper premolar and may therefore be called the deuteroconid. The last of the principal cusps to appear is generally, though by no means always, the postero-internal one, upon the lingual side of the metaconid, which may be

called the tetartoconid; its analogue in the molar crown being the entoconid. The following table will show the correspondences of *position* (not homology) of the molar and premolar cusps:

UPPER JAW.

<i>Molar.</i>		<i>Premolar.</i>
Protocone	=	Deuterocone.
Paracone	=	Protocone.
Metacone	=	Tritocone.
Hypocone	=	Tetartocone.

LOWER JAW.

<i>Molar.</i>		<i>Premolar.</i>
Protoconid	=	Protoconid.
Paraconid	=	Paraconid.
Metaconid	=	Deuteroconid.
Hypoconid	=	Metaconid.
Entoconid	=	Tetartoconid.

This table makes clear two important facts: (1.) The correspondence in homology and position between the cusps of the molars and premolars is much closer in the lower teeth than in the upper. (2.) There is not that reversal in the position of the cusps between the upper and lower premolars which is supposed to obtain in the case of the molars. In the latter the protocone occupies the antero-internal angle of the upper tooth, while the protoconid is at the antero-external angle of the lower tooth. In the premolars, on the other hand, the primary cone is in both upper and lower teeth placed at the antero-external angle of the crown.

Taeker and Röse have recently investigated the development of the molar cusps from an embryological standpoint and have reached conclusions opposed to those of Osborn as to the homologies of these elements. For the premolars the results of embryology agree entirely with those which I had reached by a comparison of the phylogenetic series. These results, however, appear to show that there is not that discrepancy between the mode of development of the premolar and molar elements which has been supposed to obtain.

There is no space to enter upon a discussion of these embryological questions, nor to show why they cannot be regarded as altogether conclusive. Should it eventually prove to be the case that molars and premolars agree in the homologies and order of succession of their component cusps, then the nomenclature of the premolar cusps here proposed may be withdrawn, and by somewhat changing the names now given the molar elements, the two may be brought into complete agreement.

THE GENERA OF AMERICAN CREODONTA.

By W. B. SCOTT.

This extinct group of flesh-eaters is difficult both to define and classify, owing to the lack of diagnostic characters and to the minute steps of gradation by which they shade into other groups of ungulates. More especially is this true of the earliest genera of the order yet discovered, those of the Puerco, which are known, for the most part, only from the teeth, and the tritubercular molar pattern being common to almost all Puerco forms, the proper reference of these genera becomes extremely difficult. The following arrangement of the order into families and genera can obviously, therefore, be regarded only as tentative.

I. Fourth upper premolar not forming a sectorial. Sectorials present, if at all, in more than one pair.

1. Superior molars tritubercular, not trenchant; cusps erect and sharp; inferior molars tuberculo-sectorial, with trigonid raised moderately above the talon and not forming a shearing blade....

Oryzodonta.

2. Superior molars quadritubercular: trigonid of lower molars little or not at all higher than the talon, with paraconid

much reduced or absent; all cusps low and massive. Premolars high and acute.

...*Arctocyoniidae*.

3. Superior molars tritubercular, with low massive cusps, but sometimes a well developed hypocone on \underline{m}_2 . Trigonid much higher than talon, but not shearing in form; paraconid reduced...

Triisodontidae.

4. Superior molars tritubercular, not trenchant; lower molars with metaconid rudimentary or absent. Astragalus grooved.

Mesonychidae.

5. Upper molars tritubercular and somewhat trenchant, para- and metacones closely approximated, and a cutting crest posterior to the latter; inferior molars with elevated trigonid forming a trenchant blade.

Proterididae.

6. Para- and metacones connate, protocone reduced or absent, and posterior ridge very large. Talon of lower molars and metaconid small or wanting, proto- and paraconids enlarged, flattened, forming a shearing blade.

Hyarodontidae.

7. Upper molars without posterior blade: para- and metacones separate, very high and acute; inferior molars with well developed metaconid and a shearing blade formed by the para- and metaconids....

Palaenictidae.

II. Fourth upper premolar and first lower molar forming the single pair of sectorials, upper molars tritubercular, lower, except \underline{m}_1 , also tubercular.

Miacidae.

ONYCLENIDÆ FAM. NOV.

The genera associated together to form this family are known almost entirely from their dentition and their relations are very obscure. Future discovery may well show that some of the forms referred to the family are not creodont at all.

Oxyclenus Cope. (Syn. *Miodenus* Cope, in part). Upper premolars simple, com-

pressed trenchant cones, except \underline{p}_4 , which has a deuterocone. The molars are tritubercular and have very acute cusps, but are not trenchant; no hypocone, but very distinct proto- and metaconules, \underline{m}_2 is the largest of the series and \underline{m}_3 very small. Puerco.

Chriacus Cope. Upper premolars compressed and trenchant, \underline{p}_3 & \underline{p}_4 with deuterocones; upper molars triangular in shape and much extended transversely; \underline{m}_1 has a hypocone, \underline{m}_2 both hypocone and protostyle, while \underline{m}_3 has neither. Anterior lower premolars simple and compressed, but \underline{p}_4 has a talon and deuteroconid. In the molars the trigonid is much higher than the heel, which is composed of three cusps. Puerco.

Protochriacus gen. nov. (Syn. *Chriacus*, Cope, in part). This genus differs from the preceding one in the simplicity of \underline{p}_3 and in the absence of the protostyle in \underline{m}_2 . In the lower molars the trigonid and talon are of nearly equal height. Puerco.

Epichriacus gen. nov. (Syn. *Chriacus*, Cope, in part). In this genus \underline{m}_2 is constructed as in *Chriacus*, but \underline{p}_4 has all the elements of a molar, though not fully developed. The third molars in both jaws is very much reduced. Puerco.

Pentacodon gen. nov. (Syn. *Chriacus*, Cope, in part). Talons of lower molars without entoconid; hypoconid and hypoconulid very acute; \underline{m}_3 largest of the series. Puerco.

Loxolophus. Cope. (Syn. *Chriacus* Cope, in part). Superior molars trigonodont with very minute hypocone, and remarkable for their antero-posterior as compared with their transverse extent. Lower molars with a high trigonid, composed of three well-developed cusps, and basin-like talons, with elevated hypoconid. Puerco.

Tricentes. Cope. Teeth very much as in

Chriacus, but with only three upper premolars. \overline{M}_1 & \overline{M}_2 nearly quadrate in outline, produced by the well developed hypocone; \underline{m}_3 has no hypocone.—Puerco.

Ellipsodon gen. nov. (Syn. *Tricentes* Cope, in part). This genus, the systematic position of which is very doubtful, agrees with *Tricentes* in having but three upper premolars. The upper premolars are relatively broad and massive, \underline{p}_4 especially so, and with very large deutercone. The molars are oval in shape and have no hypocone; \underline{m}_3 greatly reduced, forming a mere oval rudiment without recognizable elements. Puerco.

ARCTOCYONIDÆ. Cope.

Glanodon gen. nov. (Syn. *Miocænus*. Cope, in part). The separation of this genus from the European *Arctocyon* is of very doubtful validity, though the upper molars are less completely quadritubercular and less covered with tubercles. The inferior premolars are weak and simple, but \overline{p}^4 is quite large and has anterior and posterior basal cusps. The lower molars are longer and narrower than the upper, the talon longer than the very low trigonid, and the paraconid reduced or absent.—Puerco.

Tetracænodon gen. nov. (Syn. *Miocænus*. Cope, in part). The lower molars of this genus resemble those of the preceding one, but the premolars are larger and \overline{p}^4 has all the elements of a molar.—Puerco.

Anacodon. Cope. This genus was originally referred to the Condylarthra, but it has lately been shown by Osborn to be more properly referred to the present family of creodonts. The premolars are very small and reduced to two or three in number; the molars are of quadrate shape, very low and covered with numerous accessory tubercles.—Wasatch.

TRIISODONTIDÆ. Fam. Nov.

Triisodon. Cope. \overline{P}^4 very large, with well developed bicuspid talon; trigonid of lower molars rising considerably above talon; a small and low metaconid and still smaller and lower paraconid; the two latter on the same antero-posterior line; talon with large hypoconid and three small internal cusps.—Puerco.

Goniacodon. Cope. Anterior upper premolars small and simple; \overline{p}^4 with deutercone; upper molars triangular with low conical cusps, \underline{m}^1 with hypocone; \underline{m}^2 very small. In the lower molars the trigonid is moderately raised above the talon; proto- and metaconid closely approximated and form a twin cusp; paraconid very small, depressed and submedian in position; talon basin-shaped.—Puerco.

Microcænodon gen. nov. (Syn. *Goniacodon*. Cope, in part.) Trigonid as in the foregoing genus, but talon without entoconid.—Puerco.

Sarcothraustes. Cope. The largest of the Puerco creodonts are to be found in the species of this genus. The upper premolars and molars closely resemble those of *Goniacodon*; \underline{m}^3 is oval in shape, having lost the metacone, and much reduced in size. The anterior lower premolars are remarkably small and simple; \overline{p}^4 very much larger and higher, with bicuspid heel. The trigonid of the lower molars differs in construction from that of *Goniacodon*, but the talon is similar to that found in that genus; the protoconid is much the largest cusp; the para- and metaconids are much reduced and placed on the same fore and aft line. On \underline{m}^3 the hypoconulid may or may not be enlarged.—Puerco.

MESONYCHIDÆ. Cope.

Dissacus. Cope. \overline{P}_3 has a deutercone and \underline{p}_4 is completely molariform; the

upper molars are tritubercular and very simple. The lower premolars consist of a high, acute and recurved protoconid and a low trenchant heel. In the molars the metaconid is almost completely fused with the protoconid and the paraconid is rudimentary; the talon consists of the hypoconid only, which is trenchant.—Puerco.

Pachyaena. Cope. $I \frac{3}{2}$, $C \frac{1}{1}$, $P \frac{1}{4}$, $M \frac{3}{3}$. Upper teeth like those of *Dissacus*, except for the reduction of the metacone, which is absent from \underline{m}_3 . In the lower molars the metaconid has become indistinguishably fused with the protoconid.—Wasatch.

Mesonyx. Cope. (Syn. *Dromocyon*. Marsh). $I \frac{3}{2}$, $C \frac{1}{1}$, $P \frac{1}{4}$, $M \frac{3}{3}$. Differs from *Pachyaena* in the loss of the third upper molar, and the larger size of the metacone.—Bridger to White River.

PROVIVERRIDÆ. Schlosser.

Deltatherium. Cope. (Syn. *Lipodectes*. Cope). $I \frac{3}{3}$, $C \frac{1}{1}$, $P \frac{3}{3}$, $M \frac{3}{3}$. Talon of inferior molars trenchant and without entoconid; \underline{p}^4 molariform. Cutting ridge on upper molars, posterior to metacone very small and not separated from that element.—Puerco.

Sinopa. Leidy. (Syn. *Limnocyon*. Marsh. *Protomus*. Cope. *Stypolophus*. Cope). Dentition unaltered; \underline{p}_3 with a small deuterocone, \underline{p}_4 like the sectorial of the dog, but very small. In upper molars the posterior cutting ridge is enlarged and detached from the metacone. In the lower molars the trigonid forms a very high shearing blade; talon reduced and basin-shaped.—Wasatch and Bridger.

Didelphodus. Cope. $P \frac{3}{4}$, $M \frac{3}{3}$. Molars as in *Sinopa*, \underline{p}_4 simpler than in that genus, being without tritocone.—Wasatch.

HYÆNODONTIDÆ.

Oxyæna. Cope. $I \frac{3}{3}$, $C \frac{1}{1}$, $P \frac{1}{4}$, $M \frac{2}{2}$. \underline{P}_2 & $\underline{3}$ have deuterocones and \underline{p}_4 is a well-

developed sectorial, with very large deuterocone and trenchant tritocone. \underline{M}_1 is exaggeration of that found in *Sinopa*; the protocone is somewhat reduced, the para- and metacones very closely approximated and the posterior cutting ridge greatly enlarged. \underline{M}_2 is transversely extended and very short from before backward. In the lower molars the trigonid forms a very efficient sectorial blade, but retains the metaconid; the talon is small and basin-shaped.—Wasatch.

Protopsalis. Cope. (Syn. ? *Limnofelis*. Marsh). This genus is imperfectly known, but obviously nearly allied to *Oxyæna*, from which it differs in the lower molars; \underline{m}_1 has both metaconid and talon, \underline{m}_2 has lost the former and retains only a rudiment of the latter.—Bridger.

Hemipsalodon. Cope. This form, the largest of all known creodonts, is very close to the European genus *Pterodon*, from which it differs in the large size and basin-shape of the talon on \underline{m}_3 .—White River.

Hyænodon. de Lais. and Par. $I \frac{3}{3}$, $C \frac{1}{1}$, $P \frac{1}{4}$, $M \frac{3}{3}$. \underline{P}_4 is much less completely developed as a sectorial than in *Oxyæna*. \underline{M}_1 has lost the protocone, the para- and metacones are almost connate and the posterior blade is greatly enlarged. In \underline{m}_2 the para and metacones are indistinguishably fused. In \underline{m}_1 the metaconid has disappeared, but a rudimentary talon remains. \underline{M}_2 is similar, but larger, while \underline{m}_3 consists of proto and paraconids only, resembling the lower sectorial of the cats.—White River.

PALEONICTIDÆ.

Palæonictis. de Blainville. The very interesting discovery of this European genus in the American Wasatch has recently been announced by Osborn. $I \frac{3}{3}$, $C \frac{1}{1}$, $P \frac{1}{4}$, $M \frac{2}{2}$. \underline{P}_2 , $\underline{3}$, & $\underline{4}$ have deuterocones, and \underline{p}_4 has three external cusps,

thus presenting a rudimentary imitation of the cat's sectorial. \overline{M}_1 is strictly trigonodont; the cusps are all very high and acute; the para- and metacones show no tendency to coalesce and there is no posterior trenchant crest behind the metacone. \overline{M}_2 is very small, a mere oval rudiment. In the lower molars there is an efficient sectorial blade, but a well developed metaconid is retained, and the talon is small and basin-like; on \overline{m}_2 it is much reduced.—Wasatch.

Ambloctonus. Cope. P^4 , $M^{\frac{1}{2}}$. \overline{M}_1 differs from that of *Palaenictis* in the reduction of the protocone, closer approximation of the para- and metacones, and the elevation of the cingulum at the postero-external angle of the crown. \overline{M}_2 has, apparently, lost the metaconid and the talon is rudimentary.—Wasatch.

Patriofelis. Leidy. (Syn. *Oreoryon*. Marsh). $I^?_2$, C^1_1 , P^3_3 , M^2_2 . Premolars massive and having a talon. \overline{M}_1 has a talon, but \overline{m}^2 has neither metaconid nor talon, but is composed of proto- and paraconids only. Bridger.

MIACIDÆ. Cope.

Didymictis. Cope. I^2_2 , C^1_1 , P^4_4 , M^2_2 . P^4 is a fully developed sectorial, and as in the cats, viverrines, etc., it has a protostyle. \overline{M}_1 is triangular, but the antero-external angle of the crown is extended and the cingulum raised into a cusp; there is no hypocone or metacone. \overline{M}_2 is much smaller, without hypocone or conules. \overline{M}_1 has a remarkably high trigonid, and the shearing surface is rather anterior than external; the talon is low and basin-shaped. \overline{M}_2 is very small and of tubercular pattern.—Puerco to Bridger.

Miacis. Cope. (Syn. *Umtacyon*. Leidy. ? *Vulpavus*. Marsh.) Superior dentition unknown; inferior not reduced in num-

ber. In \overline{m}_1 the trigonid is much lower than in *Didymictis*, the proto- and paraconids more flattened and forming a more efficient shearing blade; the talon is basin-shaped. \overline{M}^2 & \overline{m}^3 much smaller and tubercular.—Wasatch and Bridger.

CREODONTA INCERTÆ SEDIS.

Mioclenus. Cope. This name should be restricted to those forms which agree with the type species, *M. turgidus*, in having very low and massive premolars. The systematic position of the genus is altogether uncertain; the premolars suggest relationship to the condylarthrous family, *Periptychida*, but on the other hand, the molars are of quite a different type. This obscurity cannot be removed until the foot-structure of the genus has been determined. Puerco.

Paradosodon, gen. nov. (Syn. *Chriacus*, Cope, in part). Upper teeth unknown. Lower premolars extremely narrow and compressed. Molars increase in size posteriorly and the trigonid rises but little above the talon. In \overline{m}^1 the proto- and metaconids are of about equal size and on the same transverse line, and the former shows a tendency to become crescentic; the paraconid is much reduced; the hypoconid is also somewhat crescentic, the entoconid lower and more conical. In \overline{m}^3 the trigonid is curiously asymmetrical, which is caused by the backward projection of the metaconid, the larger size of the paraconid than in \overline{m}^1 and the greater prominence of the ridge connecting that element with the protoconid; the hypoconulid is enlarged and carried on a distinct flang. The pattern of these teeth strongly suggests that more perfect material will show the genus to be related to the primitive artiodactyls.—Puerco.

The genera, *Onychodectes*, *Conoryctes*, *Hemiganus*, of the Puerco, and *Esthonyx*,

of the Wasatch, should probably be removed from the creodonts and brought into relation with the tillodonts.

COLERIDGE'S NOTES ON HORACE.

By ANDREW F. WEST.

Coleridge's habit of scribbling *marginalia* in his friends' books and his own is well known to every one who has given any study to his life. Both their quantity and their value were early made the subject of remark by Charles Lamb, and have received attention ever since. Lamb knew whereof he spoke, when he confidentially advised the book-lover to be chary of lending his books, excepting to "such an one as S. T. C.," for "he will return them (generally anticipating the time appointed) with usury; enriched with annotations tripling their value." In Lamb's own favorite copies there was legible proof of this in the "many precious MSS." of S. T. C., "in matter oftentimes, and almost in quantity not unfrequently, vying with the originals," and all scribbled "in no very clerkly hand."*

When S. T. C. got hold of a book of pure literature, his spirit of phantasy or humor or conjecture, of appreciation or mildly vapping indignation, or what not, promptly began to stir with his reading. It was then that his musings were very apt to take wing and alight outside the text, settling all over the margins. It is little wonder, therefore, that the *marginalia* of so eminent a critic and poet should be the subject of general literary curiosity and of steady collection by the British Museum.

One of his most cherished books, which has received no public notice as yet, has been in my possession for a time, through the courtesy of Mr. Beverly Chew of the Grolier Club of New York. The borders

of its pages are covered from first to last with Coleridge's loosely scribbled spluttering notes, "in no very clerkly hand" at best, and often wholly illegible. However, I have transcribed all that I can make out and present here a copious selection of them, chiefly as showing his literary appreciation of Horace and his own personality as well.

The book is his pocket copy of Horace, his constant companion for the last twenty years of his life. In 1872 it was given by the Rev. Derwent Coleridge, his son, to Mr. Augustus Swift of New York, the following being entered on the fly-leaf in Derwent Coleridge's hand:

Hoc. libellum
reliquias. patris. desideratissimi
Augusto M. Swift
alumno amico
d. d.

Derwent Coleridge
Hanwell. Cal. Aug. :—MDCCC.LXXII.

The size of the pages is three and a half by five and a half inches, and the thickness of the book a trifle over half an inch. It contains in its three hundred and twenty-five dingy little pages the whole of Horace.

It was published in London in 1637. The printing is wretchedly done. Around the text on the outer and lower edges of the pages are printed marginal notes in very small roman type, with here and there in the text a word capriciously put in italic capitals, and in the notes an occasional English word or phrase standing forth in large black-letter. The editor was Doctor John Bond, one of the best English classical annotators of the end of the sixteenth century and a scholar of sufficient repute in that time to be styled in his florid epitaph:

Eloquii splendor Pieridumque decus.

His Horace went through at least fifteen editions, the copy belonging to Coleridge

* Essays of Elia:—The Two Races of Men.

being of the sixth. The date and place of the printing (London, 1637,) are the date and place of the decree in Star Chamber prohibiting the importation of foreign type and limiting the number of printing offices,—quite enough to account for the poor typography of this copy. Moreover, as the editing by the time Coleridge got the book was as obsolete as the printing was bad, the contrasted excellence of his scribbled notes over the book he was annotating is all the more noticeable.

The last owner of the book before Coleridge was possibly Boyer (or Bowyer), his teacher during his pupillage at Christ Church Hospital. The copy had been marked for destruction by the word "Waste" in large letters on the title-page. Coleridge either saved it from the waste-basket or found it at some book-stall and subsequently had it clothed freshly with the "new coat of skins," of Hayday's binding, in which it still remains.

The *marginalia* of Coleridge begin on the ninth page with a general note, part of which is here transcribed:

"This antient drudge, which doubtless has served many masters since 1637, is the only memorial that I possess of the poor, clever, generous, noble-hearted, wrong-headed — Boyer(?) *. Tho' mark'd for waste, it is one of the last of my books that I will part with. I must afford it a new coat of skins. Yet shall its present mantle be well saved as the youthful hose of the lean and slippered pantaloon. Who knows but it may have accompanied some loyal scholar to the execution of K. Charles. It may have been fumigated in the great plague and narrowly escaped combustion in the great fire. It has seen regicide, republic, protectorate, restoration, revolution, change of dynasty, reform and free trade; nine kings, two or three queens

regnant, and two protectors, one king beheaded, one abdicated and one (at least) lunatic. It may possibly have been in the hands of Jeremy Tayler or of Milton. It may have helped Busby to an excuse to flog."

Later in the note, Coleridge has accidental occasion to comment on a passage from Suetonius, whom he characterizes as "no more than a parcel-gilt writer in point of diction, no purer in style than a cheap (?) novelist (?), yet withal a writer greatly to be recommended to all admirers of monarchy."

Then follow his separate notes on the text. A full selection is here given of the legible notes, Coleridge's language being invariably indicated by quotation marks.

ODES.

Book I.

ODE

I. [*Mæcenas atavis*]

"It was manifestly composed to stand like a picquet" (= picket) "before the collection and is about as such things generally are."

A view well borne out by the later theory that in this ode Horace merely took an old poetic exercise, to which he prefixed two lines to Mæcenas and added two more of the same kind at the end,—making the revamped effusion serve as a preface.

III. [*Sic te diva potens*]

"Imitated by Dryden and addressed to Roscommon on his voyage to Ireland. It is pleasant as a memorial of Horace's affection for Virgil." Coleridge has underscored *animæ dimidium meæ* and opposite *Acroceraunia* has written "Byron," in evident reference to the lines in Childe Harold:

The Acroceraunian mountains of
old fame

The thunder-cliffs of fear.

* (?) indicates uncertainty, due to illegibility of Coleridge's writing.

He also has as a footnote on

calumque ipsum petimus stultitia

"This line is capable of a physical and a spiritual application, 1st to Aeronauts; 2d to Fanatics. Neither were probably in the mind of Horace." The "Aeronaut," however, was in Horace's mind, in the instance of Daedalus, though perhaps not as "a spiritual application."

IV. [*Solvitur acris hiems*].

"Very sweet."

VI. [*Scriberis Vario fortis*]

"No great shakes."

VII. [*Laudabunt alii*]

On *uda Mobilibus pomaria rivis* Coleridge notes "a very beautiful image."

IX. [*Vides ut alta*].

Of *Diota*, the two-eared jar, he says, "I think I have read of a two-lugged quaigh, which would render *Diota* more exactly."

XII. [*Quem virum*]

Of *occulto ævo* he writes, "I do not see the propriety of this simile. The fame of Marcellus was a little occult as any body's."

The point, however, is that the fame of Marcellus has in it a slow silent growth like that of a great tree increasing insensibly, *occulto ævo*, in the unnoticed lapse of time.

XIII. [*Quum tu Telephi*].

"This Telephus seems to have been a dangerous youth. He is mentioned IV. 11," and in other places.

XIV. [*O navis referent*]

"I have little doubt that this allegory is aimed at Sextus Pompey."

XV. [*Pastor quum traheret*]

On *carmina divides* he writes, "The nightingale they say makes sweet division."

On *non - - - respicis*, "seest thou not behind thee." Very good for the way

retreating Paris would glance back over his shoulder at his pursuers.

XVII. [*Velox amœnum*]

"*Vitreum Circen*. Does this epithet imply the frailty of Circe? Or is it an Hyperbole like 'transparent Helena' of Shakspeare? Possibly H., by comparing the enchantress to an artificial production that seemed almost magical, hinted that her beauty was literally in enchantment."

Though it is not perfectly clear what is meant by Coleridge's last phrase, his literary sense in this criticism is surely acute, and better than that of the scholarly commentators. "Glassy Circe" has been a puzzle, and unless the idea of fragility and almost magical brilliancy (as it would seem to the ancients, for Horace applies *vitreus* to the gleam of the sea in sun-light and *splendidior vitro* to the fountain of Bandusia) are involved, it would seem to be insoluble. For the idea of fragility with brilliancy in the sense of deceitfulness, the sentence of Publilius Syrus may be cited:

Fortuna vitrea est: tūm cum splendet frangitur.

XVIII. [*Nullam Vare*]

The choriambic tramp of this ode displeased Coleridge. "I confess my inability to conceive how this and other less usual metres sounded to Roman ears. To mine as I read them they are rough and offensive."

XX. [*Vile potabis*]

"A very pretty invitation to home-brew'd."

XXII. [*Integer vitæ*]

"I wonder whether this ode is founded on fact. Wolves seldom attack man unless 'by writhing famine roused.' I suspect however that H. must have been singing sadly out of tune."

XXIV. [*Quis desiderio*]

On *Pudor et Justitiæ soror, incorrupta Fides*: and *nudaque Veritas*.

"Modesty that looks so shy
And sister she of Equity,
Faith that will not sell her vote
And Truth without a pretty coat."

This seems to be Coleridge's own version, though possibly remembered from some other translator.

"I wish Melpomene and Mercury were out of this ode."

XXV. *Parcius junctas*.

"An ugly piece. Old age should be respected even in a worn out Nasidena. The hearts of the Lydias seem to have been the same in Rome as in London."

On *flebis in solo angiportu*: "Gateway Moll."

XXVI. [*Musis amicus*]

On *Rex gelidæ metuaturs ore*, etc.:

"Never care a pin or straw for Nicholas, the Russian bear."

XXX. [*O Venus regina*]

"I can't conceive how he could think this ode worth writing."

Book II.

VI. [*Septimi, Gades aditure*.]

On *dulce Galaesi flumen*:

"Virgil* applies to Galaesus the epithet *niger* whether from the depth of shade to which Propertius alludes, or from the black depth of the water; or was Galaesus like Lodore of Southey (?) 'stain'd with peat.' Does *pellitis* mean that the sheep wore body-clothes?"

X. [*Rectius rives Licini*.]

On *informes hiemes* there is note drawn from his own experience:

"I have seen them in Ps. 30.5. His wrath endureth but the twinkling of an eye and in his pleasure there is life; heaviness may endure for a night but joy cometh in the morning. Like but

oh how different. Ovid Fast. I. 495 is much like. But he has not improved on Horace."

XII. [*Nolis longa feræ*.]

"Lempriere, with his usual felicity at blundering refers to this ode in his article. *Licinius* seems to read *nolente metro Licinia*" (= *Liegmnia*) "and actually supposes that Horace's fair-hair'd kiss-snatching wench was Mrs. Maecenas."

XVI. [*Otium divos*.]

"Prettily paraphrased by Warren Hastings. I have forgotten Warren's paraphrase. Otway's imitation is very poor."

XVII. [*Cur me querelis*.]

"This is a beautiful and tender ode, if due allowance" (is made) "for the astrological allusions in which Horace might be as earnest as Dryden. Compare I. 20. Was this written during the last illness of Macenas." "I. 20" is the ode mentioning the enthusiastic reception of Maecenas in the theatre after recovery from a severe illness.

XVIII. [*Non ebur neque aureum*.]

"A truly exquisite poem—of whose merits I was hardly aware till St. David's Day, 1825."

XX. [*Non usitata*.]

An ode whose incongruities of taste forced out of Coleridge the expression of his contempt in a facetious emendation of the expression *et album mutor in alitem*. For *alitem* he suggests "*lege Anserem*"!

Book III.

I. [*Odi profanum vulgus*.]

"These lines should be the motto for the Laureate's" (Southey's) "Songs for the royal nursery. His contra-democratic spirit appears in the first line. The . . . attention he requires in the augural phrase *favete linguis, anglice* Hold your jaw * * * *"

Musarum sacerdos expresses the Laure-

* Georgics IV. 126.

ate's mischievous principles. The 4th explains his own applicability." "The 4th" verse is *virginibus puerisque canto*.

II. [*Angustam amice*]

"Prior has imitated this ode in a composition of nearly three hundred lines into which he has contrived to interweave Horace ingeniously enough."

IV. [*Descende caelo*].

The unity of this ode seemed to Coleridge somewhat broken by the introduction of the Gigantomachia as sequel to the tribute of Horace to his guardian Muses.

"This ode, of which the former part as far as *gaudetis almae** is exquisite but as far as I can see very loosely connected with the sequel, may have been composed after the defeat of some conspiracy or revolt against Augustus. Perhaps after the conquest of Antony."

"34 *Lactum equino sanguine* is applicable to the Briton of the present day—though not in the same sense as to the Concan."

"80 The Roman writers are little favorable to Theseus or Pirithous."

XII. [*Miserarum est*]

"Ionic a minore—*metrum insequens*."

XV. [*Uxor pauperis Ibyei*]

"I half incline to suggest *sed* instead of *nec* in the last line. There is a certain connection between the casks *poti facce tenus* and the old flirt who like Ariadne and Diana Trapes might find a friend in Bacchus when other lovers had left her." It scarcely needs to be said that this conjecture of *sed* for *nec* is chiefly useful as a warning.

XIX. [*Quantum distet*]

"How came Telephas to be such a favorite with the ladies if his discourse was so chronological."

XX. [*Non vides quanto*]

"Much the worst and most disagreeable ode in Horace."

XXIV. [*Intactis opulentior*]

On *figit . . . summis verticibus clavos*,
"Hit the nail on the head."

"This ode is fine rant. To praise Scythians, Indians, heathen beasts, by way of reproach to Romans, Britons, Xtians, men, is a regular commonplace—but were not the Scythians of the same Tartar race whose hospitality offer'd wife and daughter to the casual visitor! It is altogether much in the vein of Sanford and Merton."

XXIX. [*Tyrrhena regum progenies*]

"Finely imitated by Dryden."

XXX. [*Esegi monumentum*]

On *dum Capitolium*

Scandet cum tacita virgine pontifex

Dicar:—

"Perhaps this sounded haughty, yea impious, to Roman ears. Little was it thought how long the boast was to outlive the rite."

Book IV.

IV. [*Quale ministrum*]

"This speech of Hannibal has been expanded by Prior and put into the mouth of Louis XIV. The fabled descent of the Britons from Troy makes a lucky coincidence, but Louis was not Hannibal."

VI. [*Dive quem proles*]

"This is a most artful and skilfully constructed ode. The author's name is beautifully introduced at the conclusion. A fig for the folks that proscribe egotism."

VII. [*Diffugere nives*]

On *splendida arbitria*: "I do not perceive the usual Horatian felicity in this epithet. Perhaps it is half-ironical, as if to say—When Minos has passed that wonderful judgment they all talk so much about." Coleridge here misses the point, inasmuch as *splendida* is transferred from its primary fitness for

* v. 42.

describing the grandeur of the judgment court of Minos and applied to his decrees.

On *Liberat Hippolytum*: "Here Horace speaks as a free-thinking pagan. The orthodox held that Diana did restore Hippolytus and that Theseus did deliver Pirithous—though Theseus does not appear to have Roman religion."

X. [*Ne forte credas*]

"Measure choriambic as B. 1. 18. H. N. C. remarked that the Greek movement was exotic and unnatural to the Latins. I pretend not to judge, but this ode might be forgotten much to the credit of its author."

The "Greek movement" is, of course, the choriambic metre.

XII. [*Jam veris comites*]

"This is a pleasant invitation, for it is pleasant to know that Virgil and Horace were cotemporaries."

XIII. [*Andivere, Lyce*]

"This is another peccadillo neither moral nor amiable."

EPODES.

I. [*Beatus ille*]

On v. 24—*tenaci gramine*: "knot-grass, teded grass."

v. 27—*obstrepunt*: "sough."

v. 39—*in partem juvet*: "bear a side."

v. 66—*renidentes Lares*: "silver-salt."

III. [*Parentis olim*]

v. 3—*cicutis allium nocentius*: "I honor Horace for hating garlic."

IV. [*Lupus et agnis*]

v. 5—*superbus pecunia*: "purse-proud."

v. 12—*praeconis*: "beadle."

VI. [*Quid immerentes*]

v. 16—"Libellers are much the same now as in the days of Cassius Severus, prone to attack, inveterate cowards

against the bold, and ready to catch at hush-money."

XIII. [*Horrida tempestas*]

"This ode should be distributed into staves of three lines. The metre sounds ill to me."

XVI. [*Altera jam teritur*]

v. 10—"O thou wilt be a wilderness again

Peopled with wolves, thy old inhabitants."

v. 18—"Herod. 1. 163. Part of the *execrata civitas* did break their oaths."

v. 57—"Where did Horace expect to find such a lubber-land? Schlummerland. Pays de Cocagne! He must have heard of the bread-fruit."

SATIRES.

Book I.

I. [*Qui fit, Maecenas*]

On v. 15—"Gay has a good fable on this idea."

v. 29—*Perfidus hic caupo*: "I hence infer that Ovid" (surely a slip for "Horace") "had been called into a reckoning many a time. Le mauvais quart heure."

v. 85—*vicini oderunt*: "I believe this happens."

II. [*Ambubaiarum collegia*]

"Poor Joe Walton for inserting Pope's imitation of this satire in his edition, gave Matthias an opportunity of being as moral and as testy as an old maid."

IV. [*Eupolis atque Cratinus*]

"This satire is an ingenious defence of satire in which the satirist modestly praises himself and gives a fresh cut to those that are smarting also."

On v. 9—*emunctae naribus*: "a delicate metaphor showing the high

importance of the mucking-can."

v. 83—*famamque diracis*: "Disent des bon mots, mauvaise caractere. Pascal."

v. 105—"I do not approve at all of old Mr. Horace's method of moral institution which is too common with professing Christians."

v. 143. *Judaei*: "Fates render it impossible that Jews should be confounded with Christians, but the allusion is not clear." The allusion is to the tendency of the Jews to proselytize.

V. [*Egressum magna*]

v. 98—*Gnatialymphis iratis*: "Would not *nymphis iratis* be a better reading?" Still another instance of the danger of marring the text by trying to mend it. There is no trouble, since *Lympha* in the same sense as *nympha*, "a water-goddess," is good Latin from the time of Varro onward.

VII. [*Proscripti Regis Rupili*]

"I must say England in the most quibbling" (squabbling?) "age never produced anything viler than this classic contest. It is in the worst style of the most scolding scenes of the Old Dramatists."

X. [*Lucili, quam sis*]

"This satire has suggested Rochester's allusion, in which are to be found the often-noted characters of Sedley and the antithetic compliment to Dorset, 'The best good man with the worst natured muse.' Some of the accomodations are apt enough, but the parallel of Dryden with Lucilius is not happy."

Book II.

I. [*Sunt quibus in satira.*] Imitated by Pope.

II. [*Quae virtus est.*]

"Imitated by Pope but not happily. Roman *gourmandise* had but little resemblance to English nor is epicurism a characteristic foible of England."

v. 68—*simplex Nævius*: "Billy Coates."

v. 77—*cena dubia*: "Terence Phormio. A. 2. Scene 1, 'I doubt not that the phrase was fashionable.'"

III. [*Sic raro scribis.*]

v. 1—"Scarce twice a poetic month you appear in print. Pope."

v. 44—"The *grex* *Chrysipi* must have been mad enough if they were like this man, and he like his character in Lucretius."

v. 60—"A pretty theatrical anecdote. Fufius must have been in a deeper dram of drink than ever George Fred. exhibited."

v. 135—"Pro '*auctum*' lege '*actum*.'" A happy yet obvious correction of what may, after all, have been a printer's slip.

v. 183—"Cicer - Fuba - Lupini - would go but a little way towards modern expenses. Nor do I suppose they went far in the age of Horace. The words and perhaps the articles were relics of a cheaper, and not necessarily a better age."

v. 255—"I read the story of Polemo in Sanford and Merten, A. D. 1805."

VI. [*Hoc erat in votis.*]

"Paraphrased by Swift and Pope.
The coincidences are very lucky."

v. 20—"Janus presided over the
Roman Paternoster Row.
His double face well quali-
fied him for the place." Is
the last sentence a couplet
quoted by Coleridge?

VII. [*Iam ludum ausculto*]

v. 4—*Ut vitale putes*: "I should ren-
der it 'worth my keep,'
'I don't eat my head off.'" Then he adds in pencil
"Rather life-like, not too
good to live."

EPISTLES.

Book I.

I. [*Prima dicte mihi.*]

"Well imitated by Pope, especially
the first part."

v. 16—*agilis*: "busy."

v. 21—*opus debentibus*: "authors who
have received money in
advance."

v. 24—*graviter*: "heartily, with all
one's might, in right ear-
nest."

v. 54—"It proves the good sense
of the Romans that they
made the double-faced
god, the tutelar of their
Change-alley and Pater-
noster Row."

Book II.

II. [*Trojani belli scriptorem*]

"Homer might well be a better
teacher than Chrysippus—if the latter
approved of the marriage of parents
and children—of eating dead bodies,
etc. *Sed quare*. This may be as true
as that he died, like Philemon, of excess,
eating figs."

III. [*Juli Flore quibus*]

v. 9—"Poets should never promise

fame to one another. Who
was Titius?" He is still un-
known, except for this solitary
mention in Horace.

V. [*Si potes Archiacis*]

"This epistle has been imitated with
much prolixity and considerable hu-
mour by Swift."

VI. [*Nil admirari*]

"Imitated by Pope. He seems to
have pleased himself. The epistle is in
his best verse and diction, but it is not
satisfactory. The style is so poignant
that it seems to require every line to
tell. Whatever is plain seems insipid;
the weaker parts do not set off but
interrupt the hits. They look like
patches of brick-work from which the
stucco has fallen."

VII. [*Quinque dies tibi*]

"Imitated or rather transcribed by
Swift and Pope."

v. 58.—*Lare certo*: "*Libri veterrimi habent*
'*lare certo*'—*quod forte melius.*"
Curto was the reading prefer-
red by Bentley, with some
MSS. support. It has not
been generally adopted.

X. [*Urbis amatorem Fuscum*]

v. 10.—*Liba recuso*: "Mouldy stew'd
prunes and stale cakes."

v. 22, sqq.—"These lines may have sug-
gested a beautiful passage
in Cowper's Task."

XIII. [*Ut proficiscentem*]

"How delightful to find Horace pun-
ning on a name, and then for a Roman
to have such a name." (The name is
Vinius Asina.) "I like both these and
Horace the better."

XV. [*Quae sit hiems Veliae*]

"This epistle is a fair specimen of
plain confession under the garb of irony.
Maenius is capital. The swell-feast
buffoon to a nail."

v. 15.—*Putcosque perennes*.—"Should not

the *-que* be *-ve*?" The true reading is *-ne*. Coleridge saw the difficulty but not the remedy, though his *-ve* is better than the *-que* he would displace.

XVII. [*Quamvis, Scaeva, satis*]

"There is much quiet wit and some sense in this epistle, though after all it rather smells of the parasite."

v. 37.—"*Sedit*, etc. If you fear falling, best not climb at all."

XVIII. [*Si bene te nori*]

"Whether Horace really meant to recommend attendance on the great to Lollius or to scare him by a strong picture of the insecure and slavish tenure of the great man's friendship is not obvious. He certainly boasts of his own retirement and independence on the banks of Digentia." In v. 35 Coleridge's copy began the line with *Traxerit aut olitoris*, etc. His correct remark is "*Lege. Thrax erit, i. e. Gladiator. Certissima emendatio*," but the emendation may have come from reading some other edition of Horace.

XIX. [*Prisco si credis*]

v. 48.—"I smell a pun. *Ludus* means either play or place of exhibition."

XX. [*Vertumnus Janumque*]

v. 28.—*Collegam Lepidum quo duxit Lollius anno*: "This was U. C. 733 or before Christ 21. The election of consuls took place while Augustus was absent in Sicily and was attended with much riot and electioneering (*ambitus*). Lollius was originally sole consul, the other place being left open for Caesar's acceptance, but he declined it and Lepidus was appointed after a violent contest. In this year Agrippa, by the

Emperor's command, divorced Marcella and married Julia, from which marriage descended Caligula, Agrippina, and Nero. In nothing has the divine law more signally vindicated itself than in the disastrous issues of antique marriage."

Book II.

I. [*Cum tot sustineas*]

"Well imitated by Pope. But there is much false criticism both in the original and in the imitation. Pope addressed Augustus, though there never was an Augustus in England."

v. 46.—"This line matches in number of elisions Virgil's *monstrum horrendum informe*, etc."

v. 233.—"The few fragments of Chærilus which I have seen by no means deserve this character."

v. 248.—"I have seen this verse and the two preceding bracketed as if spurious—but they seem to follow aptly enough, and indeed are necessary, or else Horace might be suspected of including Augustus in his censure on royal taste. Pope has omitted them in his imitation, perhaps because no English Augustus had patronized a Virgil or a Varius."

There is enough in these selections to show how assiduous a reader of Horace Coleridge must have been. There is also enough to warrant a judgment as to the value of his notes. They are not uniformly excellent. In his few ventures at text emendation he is at his worst, and his suggestions have nothing notable about them. Where they are right they are so obvious as to call for little insight to make them, and where the difficulty

lies below the surface Coleridge is wrong. There is also a stray slip or two in the interpretation of Horace. The misunderstanding of *splendida arbitria* (Odes IV. 7) is one and the ridicule of the ending of the sixteenth Epode is another. Then too he has much trouble with the unusual metres,—particularly with the choriambic element, which worries him. Yet these are practically all his defects. On the other side we get a considerable amount of criticism, by the time his annotations are put together. His estimates of whole poems are usually sound and very clear; his responsiveness to fine images and touches is quick and spirited; he makes happy hits in translating recalcitrant words and phrases; he sometimes sees at one glance where the real meaning of a puzzling expression lies, (such as *vitrea Circe* in Ode 17 of the first book); his freaks of humor are always amusing and not unfrequently enlightening as to the true meaning of Horace, and his criticisms of Swift, Pope, Dryden, Prior, and other English imitators of Horace, are of course entitled to great respect.

The extent of his contribution to the direct elucidation of Horace is not very significant. A few acute hints in the interpretation of difficult places and a fair number of happy translations may still be considered of value. The larger part of his contribution is indirect, and consists in his open-minded literary dealing with Horace, and the confidential acquaintance he has made with him. From this comes the chief advantage of watching Horace through Coleridge's eyes. It develops literary vision.

SOME POINTS OF GENERAL INTEREST UPON THE HABITS OF THE RATTLE-SNAKE.

By A. H. PHILLIPS.

I have had under close observation during the past few months a rattle-snake,

which from appearances took more kindly to its unnatural surroundings of confinement than is the case with snakes of this class, it being generally considered that they refuse all food while in confinement, and in a fasting condition live from one to two years. This specimen fed as though in its natural environment.

The points to be noted are the following:

1st. That while the poisonous secretion may be used as a protection against its enemy, it also fulfills the no less important function of killing its prey. Every time a mouse was loosened in the box, the snake would assume the usual coiled position before striking and having given the stroke, would remain quiet. In no case did it strike a second time, however much the mouse leaped around in the convulsions that followed. Death resulted in one instance in 48 seconds, but in others it was much quicker. In all cases where the animal was small enough to be swallowed by the snake, death followed quickly enough to prevent its escape.

2d. In striking, the coiled position was almost always assumed, but did not seem necessary. It increases the field of command, as a wound can be inflicted at a greater distance and with greater accuracy. The distance at which a wound can be given while in this position, is roughly estimated at about two-thirds the entire length of the snake. The last, or tail coil, does not unwind while in the act of striking.

3d. The wound is inflicted, not by a pinching process of the jaws, but rather by a thrust, the upper and lower jaws being opened so wide as to be nearly in a straight line at the moment the wound is inflicted. The fangs, pointing forward at a right angle, are by the momentum of the body plunged into the tissues as a lance.

4th. In no instance, where small animals or birds not too large for food were introduced, was the warning rattle produced, the victim being struck quietly. Only in cases where it seemed the snake feared injury to itself was the warning sound given, indicating an unwillingness to bite. It would rather warn the offender than be

forced to strike through protection to itself. A dog seemed to excite it greatly. In such cases added to the rattle was a low hissing noise due to expulsion of air from the lungs, the body at the same time appearing greatly swollen from their inflated condition.

REVIEWS OF BOOKS.

OUR MORAL NATURE. Being a Brief System of Ethics. By James McCosh, D.D., LL.D., D.C.L., ex-President of Princeton College. New York, Charles Scribner's Sons, 1892.

This little volume of fifty-three pages from the pen of the veteran author is divided into three sections. Part First treats of Fundamental Principles, the topics being, Moral Obligation, Conscience, Moral Law, Love, The Divine Existence, The Combined Moral Principles. The Will, Evangelical Ethics, Sin and Punishment. These topics are very briefly but simply treated. The fundamental fact of Morality is the Consciousness of Obligation which expresses itself in moral law. The source of moral ideas is the Conscience which is both a cognitive and motive power. McCosh maintains here as elsewhere in his works, that moral quality is intrinsic in actions and that conscience perceives this quality and gives direct knowledge of rightness and wrongness. This is the objective side. Subjectively the root of good and evil is to be found in the will. Kant's doctrine that "nothing can possibly be conceived in the world or even out of the world, that can be called good without qualification, except a good will," is quoted with approval. The choice of will is necessary to make an action ours and to fix our responsibility for it. Our duties arise out of our relations. This suggests

the relation of morality to religion. The question of God's existence is briefly discussed. God's relation to morality is that of the Author of man's nature and of the moral law. From the standpoint of religion the obligations of morality become Divine Commands. Thus we are able to reconcile the two propositions, that morality is intrinsic and that it is a Divine Command. Evangelical Ethics is an extension of Natural Ethics. It arises in view of sin and the Scriptural doctrine of the Fall and the Christian scheme of Atonement and Redemption. Evangelical Ethics does not set aside Natural Ethics, but rather supplements and completes it.

Part Second treats of Moral Ideas. The principal topics here are Happiness and Morality, Moral Excellence, Justice, Rights, Property, Benevolence and Justice, Summum Bonum, Virtuous Acts, Morality and Our Natural Faculties. It is our duty to promote both happiness and virtue, but when conflict arises happiness must yield to the requirements of duty. Then follow sagacious observations on Justice, Rights and Property. The claims of Benevolence and Justice are treated in much the same spirit as those of happiness and morality. Both are obligatory, but in cases of conflict Justice must be given precedence. The Summum Bonum is not happiness, but moral excellence, although happiness is a bonum that all may seek to obtain. Moral

acts are voluntary and their motive should embrace both Love and Law. The author pleads for a conception of motive which shall include all the elements of man's nature,—sensitive, intellectual and emotive. Law must be supreme, but love must enter to give spontaneity to the performance of duty.

Part Third treats of Duties. Taking the Scriptural injunction to live soberly, righteously and godly, as the basis of classification, the author discusses Duties to God, False Systems, Duties to Our Fallen Men, to the Churches, the State, War, Duties to Ourselves, all of which are treated with good sense and discrimination. Dr. McCosh's book does not aim to be an elaborate treatise. It is rather a summary of the author's matured opinions on fundamental moral questions, the majority of which have been treated more at large in other works. In its form the treatise is simple and unpretentious, while in its content it is the product of ripe experience combined with philosophic wisdom and the spirit of true piety.

A. T. ORMOND.

VICTOR HUGO'S "LA CHUTE," by H. C. O. HUSS, Ph.D., Professor of Modern Languages and Literature in the College of New Jersey, Princeton. D. C. Heath & Co., 1892.

Professor Huss presents to teachers of French an extract of eighty-two pages from Part Second, Book First, of "Les Misérables." The selection was evidently made after a careful consideration of the needs of schools and colleges, and one might say, a reverent estimate of the great literary monument from which it was detached. We fancy that few editors would have been so scrupulous not to misrepresent a master of whose work they designed to present only a short specimen. Victor Hugo the philanthropist, Victor Hugo the

psychologist,—his autograph is written as large across these few but burning pages as in the fifty octavo volumes of the *Édition définitive*.

"La Chute" embraces the mysterious appearance of the escaped convict Jean Valjean in the town of Digne, his hospitable reception by Bishop Myriel, after being driven from the doors of others, his moral fall and recovery.

We have always thought Victor Hugo good reading for students, both because of his paramount importance among modern Frenchmen and because of the brilliant simplicity of his style and the intensity of his thought; but the enormous length of "Les Misérables" and even the great length of "Notre-Dame de Paris" and "Quatre-vingt-treize," seemed to bar out his prose from the class-room. "Thrice happy then the author!" it would be easy to exclaim at this point. But we think Hugo himself, lover and understander of the young, would join us in recognizing that even the ill-founded enthusiasm of a boy, stumbling through an author he but half understands, yet feels and adores, is more to be coveted by a man of letters than the cold appreciation of an adult, who understands, but is little influenced.

What the youth who reads Hugo cannot help feeling in every fibre of his being, whether he knows his irregular verbs or not, is the spurt of emotion that bursts from the great heart of the author, proving life real and affirmative, and making self-evident the one truth which poets never cease to sing, the truth that love is best. A boy of sixteen who reads "La Chute," and through it gains sympathetic knowledge of Hugo, will have profited more than if he were to wait ten years and then to read the whole of "Les Misérables." It is a fine thing to have obtained *early* an insight into the mind of a great man.

Books which mediate such intimacy are the best educators.

GEO. M. HARPER.

THE NICENE AND POST-NICENE FATHERS. Second Series. Vol. III. Theodoret, Jerome, Gennadius, Rufinus: Historical Writings, etc. New York: The Christian Literature Co. 1892.

The second part of this volume, pp. 349-402, is Jerome and Gennadius. *Lives of Illustrious Men*. Translated, with Introduction and Notes, by Ernest Cushing Richardson, Ph.D., Librarian of Princeton College. In his Introduction Dr. Richardson treats of the time and place of composition and of the character of the dual work, of the literature on the two authors as well as on these whose biographies they write, of the various manuscripts,

editions and translations of the *Lives*, and of the present translations. The work of Jerome is settled as having been written at Bethlehem in 492, and that of Gennadius almost certainly about 400, the earliest of the dates usually given. The so-called *Lives* are mere paragraphs, whose purpose was to enumerate the various treatises written by the authors named. Dr. Richardson has seen 84 MSS. of Jerome and 57 of Gennadius and has memoranda of at least 25 more and hints of still another score. His translation is made from the text of Herding, with corrections in instances in which the evidence of the MSS. was clearly against that text. He was unable to do what he had at first intended, viz.: publish a corrected text of the two works. The value of the translation is instanced by numerous critical and explanatory notes. J. H. DULLES.

NOTES.

PROFESSOR JOHN DE WITT, D.D.

The new Professor of Church History in the Theological Seminary at Princeton, was born at Harrisburgh, Pa., October 10th, 1842. He graduated from Princeton College in 1861 and at once began the study of law; but soon discontinued this and entered Princeton Seminary the same year. After spending a little more than two years at Princeton he completed his theological course in Union Seminary, New York. Dr. DeWitt served pastorates at Irvington, N. Y., Boston, Mass., Pittsburgh and Philadelphia, Pa. In 1882 he became Professor of Ecclesiastical History and Church Polity in Lane Theological Seminary, Cincinnati, Ohio. This chair he exchanged in 1888 for that of Apologetics and Missions in McCormick Theological Seminary, Chicago, Ill. There he remained until called to the chair he now occupies in

Princeton. He was a director of the Seminary from 1881 until 1883. He published in 1885 "*Sermons on the Christian Life*."

The Rev. J. H. Dulles, Librarian of the Theological Seminary, has published a list of *One Hundred Books for the Minister's Library*. As stated in a prefatory note, the chief purpose of this list is to meet the minister as a student of the Bible. Although primarily intended for Presbyterian ministers, it is denominational only in a few instances. It embraces works under the following heads: General; Exegesis—*Introductory*; Exegesis—*Commentaries*; Apologetics; Dogmatics; Ethics and Ecclesiastics, and History.

Mr. M. Fischer, the Curator of the E. M. Museum, has published in the *American*

Naturalist for May, 1892, the following translation from the French: Rules of Nomenclature adopted by the International Zoological Congress held in Paris, France, 1889.

In the *Neues Jahrbuch für Mineralogie,*

Geologie und Palæontologie, Jahrgang 1892, erster Band, a translation of a paper by Dr. Charles E. Beecher from the *American Journal of Science*, Vol. XLI, April, 1891, entitled "Development of the Brachiopoda." Part I. Introduction.

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